

# VARIABLE SPEED DRIVES PROVIDE COOL SAVINGS

## CUSTOMER PROFILE

The installation of variable speed drives for fan control in a cooling tower at Teesside Power Station is reducing downtime, as well as giving the potential for improving overall generating efficiency.

## THE CHALLENGE

Px limited, the power station's operating company, needed to replace six two-speed motors for one quadrant of the Q501 cooling tower. The company hoped to overcome the maintenance problems it was experiencing due to shock loads on the blades, bearings and gearboxes, a result of the aggressive environment causing high corrosion. Px limited wanted to re-use the existing control cubicles to make the project cost effective but their narrow dimensions were creating an issue.

## THE SOLUTION

Control Techniques retrofitted six 132 kW Unidrive SP AC drives into the DOL starter suite, each fitting comfortably into its narrow cubicle. The drives operate in open-loop control, with additional on-board I/O providing sequencing control, interfacing to the existing system.

"Only one drives company - Control Techniques - could give us the drives features we wanted in a compact package that would fit", explained Jon Scott, Senior Electrical and Control Engineer at px limited. "The DOL starters produce mechanical snatch on high-inertia components, whilst, with the variable-speed drives, the fans are started gently and ramped up to its two-speed set-points. Equally, the stop sequence is a pre-determined ramp-down. We expect to see major benefits of reduced maintenance on this quadrant."

## THE BENEFITS

Px is running the new variable speed-controlled quadrant at a slightly higher speed than before, giving improved performance of that quadrant. "We were concerned about the possibility of excessive heat and noise from the drives," continued Mr Scott, "but in practice the drives run very quietly with very little heat output."

"It's a very windy site," added Assistant Performance Engineer, Stefano Scazzola, "so that sometimes we have to reduce speed of a quadrant or the fans will trip out due to the vibrations. Using variable speed fans means that a complete quadrant can be ramped down to an intermediate point, keeping the quadrant in service. The performance of a cooling tower is crucial to the vacuum in the condenser on the steam turbines and the overall station efficiency."



## KEY BENEFITS

- **IMPROVED COOLING TOWER PERFORMANCE**
- **INCREASED POWER STATION EFFICIENCY**
- **REDUCED MAINTENANCE**
- **VERY QUIET & VERY LOW HEAT OUTPUT**

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